

Historic, Archive Document

Do not assume content reflects current
scientific knowledge, policies, or practices.

1.9622
A3F76
c-3

STATION LIBRARY COPY

S.

FOREST SURVEY RELEASE NO. 8

MAY 15, 1941

THE DISTRIBUTION OF COMMERCIAL FOREST TREES
IN NORTH CAROLINA

by

E. V. Roberts, Regional Survey Director
and
J. W. Cruikshank, Associate Forest Economist

A FOREST SURVEY PROGRESS REPORT



U.S. FOREST SERVICE
RECORDS
BRANCH

1948 NOV - 9 P 4: 51

USDA
NORTH AGRICULTURAL LIBRARY

US Southeast Forest Survey

U. S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE

Appalachian Forest Experiment Station
R. E. McArdle, Director
Asheville, N. C.

PREFACE

Through the McSweeney-McNary Act of 1928, Congress authorized the Secretary of Agriculture to conduct a comprehensive survey of the forest resources of the United States. The Forest Survey was organized by the Forest Service to carry out the provisions of the Act, and each of the 12 Regional Forest Experiment Stations is responsible for the work in its territory. In the Middle Atlantic States the Forest Survey is an activity of the Appalachian Forest Experiment Station, Asheville, North Carolina.

The work of the Survey is divided into 5 major phases:

1. Inventory. Determination of the extent, location, and condition of forest lands, and the quantity, species, and quality of the timber on these lands.
2. Growth. Determination of the current rate of timber growth.
3. Drain. Determination of the amount of industrial and domestic wood use, and the total loss resulting from fire, insects, disease, suppression, and other causes.
4. Requirements. Determination of the current and probable future requirements for forest products by all classes of consumers.
5. Policies and plans. Analysis of the relation of these findings to one another and to other economic factors as a basis for public and private policies and plans of forest land use and management.

This progress report presents information on one part of the inventory phase of the Survey and deals specifically with the geographic distribution of the more important commercial forest trees in North Carolina.

The report is made possible through the assistance received from the personnel of the Work Projects Administration. Particular credit is due Mr. W. H. Winston and Mr. Harry Watkins of the Work Projects staff. The preparation of the maps from the basic field data were official projects 765-32-3-3 and 165-2-32-94.

Assisting Survey Staff

G. E. Morrill) Preparation of
T. C. Evans) Tables of Volume

CONTENTS

	Page
Preface	i
Purpose of Report	1
Method of Constructing Maps	1
Maps based on forest types	2
Maps based on species and diameter-class	2
The Forests of North Carolina	3
Species	3
Forest types	3
Forest conditions	3
Forest Survey Releases Pertaining to North Carolina	4
Distribution Maps of Commercial Forest Trees	5
Loblolly pine	6
Shortleaf pine	7
Longleaf pine	8
Pond pine	9
Virginia pine	10
White pine	11
Redcedar	12
Hemlock	13
Cypress	14
Red oak	15
White oak	16
Chestnut oak	17
Chestnut	18
Ash	19
Hickory	20
Sweetgum	21
Sweetgum	22
Blackgum	23
Blackgum	24
Yellowpoplar	25
Yellowpoplar	26
Basswood	27

THE DISTRIBUTION OF COMMERCIAL FOREST TREES IN NORTH CAROLINA

PURPOSE OF REPORT

The geographic distribution of the species of forest trees and their sizes is of considerable economic importance to the wood-using industries. The ordinary forest type maps are valuable for many purposes but for industrial use maps are needed which show where certain species and tree sizes are most abundant. Established plants must know the location of areas with suitable timber supplies and prospective wood-using industries need the same information as an aid in selecting desirable locations.

The maps included in this report are designed to provide more definite information regarding the location of forest tree species in North Carolina. They show where selected species of commercial importance occur and, what is more important from an industrial standpoint, the areas of dense concentration. Forest industries can thus avoid the expense of wide reconnaissance and can concentrate their wood procurement activities in the most favorable localities.

METHOD OF CONSTRUCTING MAPS

The sample plots established in 1937 and 1938 by the Forest Survey in the comprehensive inventory of the forest resources of North Carolina have been used in the construction of these maps. The plots were located at intervals of one-eighth of a mile on parallel compass lines 10 miles apart extending across each of the survey units into which the state was divided (fig. 1). The data recorded on each forest plot included a brief over-all description of the forest stand and a tally of the species, number, and size of all forest trees one inch and larger in diameter at breast height.

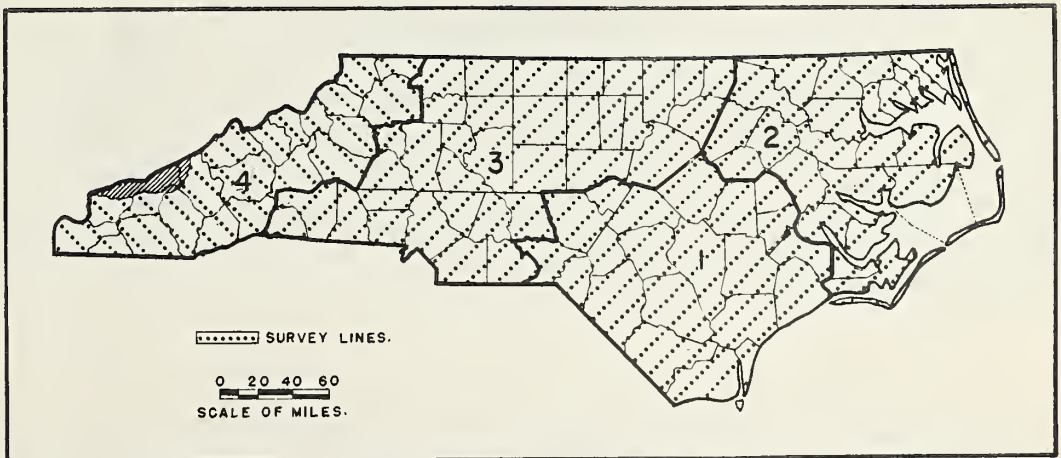


FIGURE 1—APPROXIMATE LOCATION OF SURVEY LINES IN NORTH CAROLINA.

This procedure gave an accurate picture of the timber stand on each forest plot, but because of the necessity for using a sampling method rather than a 100 percent tally of all forest land, each plot represents about 800 acres of forest. Obviously many local concentrations of timber could not be sampled and the maps are therefore not reliable for locating timber on small ownerships. Nearly 38,000 uniformly distributed plots in North Carolina do provide, however, a dependable measure of the commercial concentration of certain species and sizes within counties.

On each map the total volume of sound trees is shown by diameter class for each unit and for the state. The volume of the under-sawlog-size trees is given in cords and the net volume of saw-timber material is given in board feet measured by the International $\frac{1}{4}$ -inch rule, a close approximation of green lumber tally. In a few units the volume of certain species is insignificant and is not shown separately.

The accompanying maps are of two distinct kinds; those based upon forest types and those based upon species and diameter class. They are described as follows.

Maps Based on Forest Types

The maps showing the distribution of longleaf, loblolly, shortleaf, pond, and Virginia pines are based upon forest types. That is, every dot represents a forest plot on which the particular pine species is predominant. In the map showing the distribution of shortleaf pine in North Carolina, for example, each dot is a forest plot typed in the field as shortleaf pine. Other pine species may have been present upon the plot but not in sufficient quantity to influence the type classification. This method delineates the areas dominated by a particular pine species and is not intended to indicate the maximum range of the species.

Maps Based on Species and Diameter Class

The maps showing the distribution of white pine, redcedar, hemlock, cypress, red and white oaks, chestnut oak, chestnut, ash, hickory, sweetgum, blackgum and tupelo, yellowpoplar, and basswood are based on the occurrence of individual trees on the sample plots. For example, each dot on the maps showing the distribution of redcedar represents a plot on which there was at least one sound redcedar tree 8.0 inches or larger in diameter. On many of these plots there were undoubtedly several large redcedars. As every species is not plotted uniformly in regard to the number of individual trees per plot or size-class represented, the basis is given in the legend of each map. The distribution of oaks, gums, and yellowpoplar 18.0 inches d.b.h. and larger has been presented to facilitate industrial use of these premium sizes.

THE FORESTS OF NORTH CAROLINA^{1/}

Species

Forests occupy 18 million acres, 59 percent of the land area of the state. Loblolly pine is the most abundant species, dominating the forest over much of the Coastal Plain. Blackgum, tupelo, and pond pine are also important in many of the swamps of this area. Shortleaf pine is most common in the Piedmont of North Carolina although it is largely replaced by Virginia pine in that part of the Piedmont bordering the Blue Ridge. A great variety of species are found in the mountain region. Sound dead and dying chestnut has the greatest commercial volume of any single species in the mountains but yellowpoplar and several species of oaks are more important as a future source of sawtimber. Throughout the state the hardwoods intermingle with the pines and altogether constitute nearly one-half of the total sound-tree volume.

Forest Types

The loblolly pine-hardwoods type is the most extensive, occupying 26 percent of the forested land in the state. About 17 percent of the forest is in the shortleaf pine-hardwoods type. The third largest pine type is pond pine-hardwoods found on nearly two million acres in the Coastal Plain, 11 percent of the total forest land. Smaller in area are the longleaf pine-hardwoods, Virginia pine-hardwoods, and white pine-hardwoods types, which occupy respectively five, four, and two percent of the forest area.

Nearly four million acres of forest, 22 percent of the total, is classified as upland hardwoods. This broad classification covers a variety of hardwood species combinations but in general the hardwood forests of the Piedmont are an oak-hickory association and those of the mountains are oak-hickory and oak-chestnut. The bottomland hardwoods type is found chiefly in the large swamps and river over-flow basins of the Coastal Plain. It occurs on about 13 percent of the forest land.

Forest Conditions

The forests of the state are predominantly second growth. Old-growth stands occupy only 12 percent of the forest land, and many of them are small scattered tracts in themselves of limited commercial importance. The 7.5 million acres of second-growth sawtimber constitute 42 percent of the forest area. About eight million acres, 45 percent, are stocked with young second growth under-sawlog-size. The mountain region has the highest proportionate area stocked with these young stands. Less than two percent of the forest land is clear-cut and not restocking, practically all of it in the Coastal Plain.

^{1/}A detailed description of North Carolina's forest resources and industries is presented in the Forest Survey Releases listed on page 4. Copies of these releases may be obtained by writing the Appalachian Forest Experiment Station, Asheville, North Carolina.

FOREST SURVEY RELEASES PERTAINING TO NORTH CAROLINA

Forest Resources of the Southern Coastal Plain of North Carolina.
Forest Survey Release No. 4, April 1, 1940. (Survey Unit No. 1).

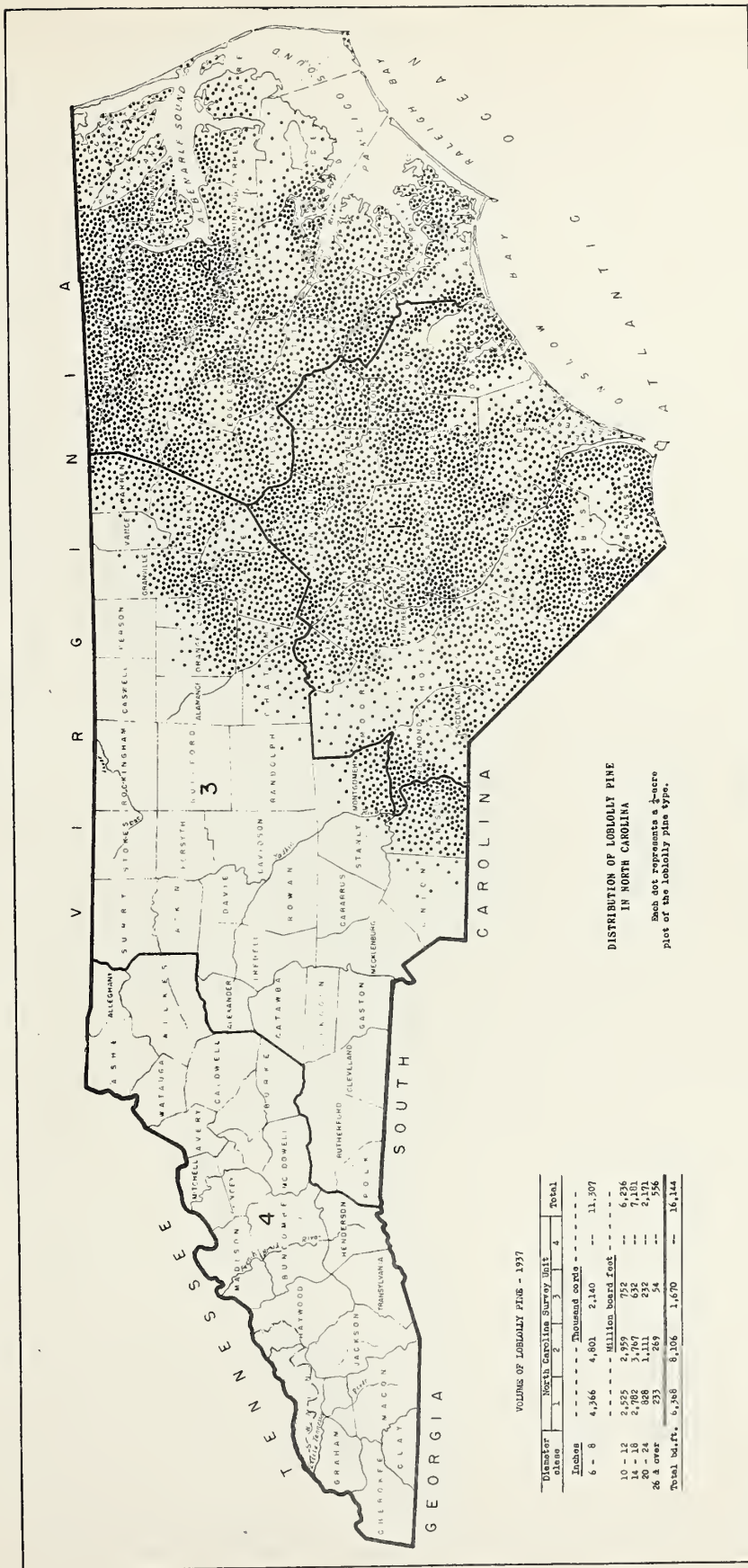
Forest Resources of the Northern Coastal Plain of North Carolina.
Forest Survey Release No. 5, June 15, 1940. (Survey Unit No. 2).

Forest Resources of the Piedmont Region of North Carolina.
Forest Survey Release No. 6, November 15, 1940. (Survey Unit No. 3).

Forest Resources of the Mountain Region of North Carolina.
Forest Survey Release No. 7, April 1, 1941. (Survey Unit No. 4).

DISTRIBUTION MAPS OF COMMERCIAL FOREST TREES

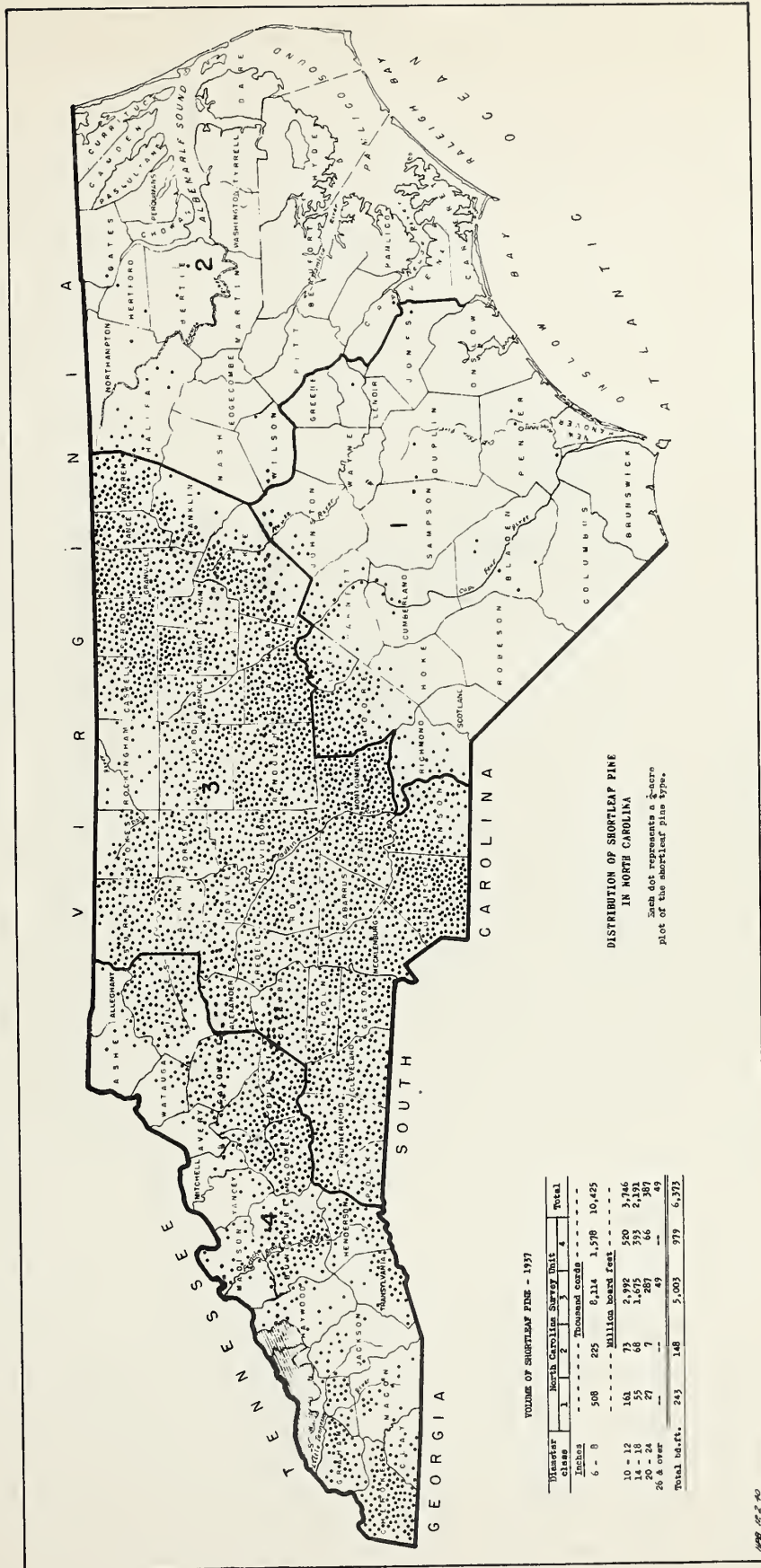
<u>Map</u>	<u>Tree Species Included</u>
Loblolly pine	- Loblolly pine
Shortleaf pine	- Shortleaf pine
Longleaf pine	- Longleaf pine
Pond pine	- Pond pine
Virginia pine	- Virginia pine
White pine	- Eastern white pine
Redcedar	- Eastern redcedar
Hemlock	- Eastern hemlock, Carolina hemlock
Cypress	- Baldcypress, pondcypress
Red oak	- Black, scarlet, water, willow, southern red, cherrybark, and northern red oak.
White oak	- White oak, swamp chestnut oak
Chestnut oak	- Chestnut oak
Chestnut	- American chestnut
Ash	- White, red, green, and Carolina ash
Hickory	- Bitternut, water, shagbark, mockernut, and pignut hickory.
Sweetgum	- Sweetgum
Blackgum	- Blackgum, water tupelo
Yellowpoplar	- Yellowpoplar
Basswood	- American, white, and Carolina basswood.



DISTRIBUTION OF LOBLOLLY PINE
IN NORTH CAROLINA
Each dot represents a 1-acre
plot of the loblolly pine type.

VOLUMES OF LOBLOLLY PINE - 1937

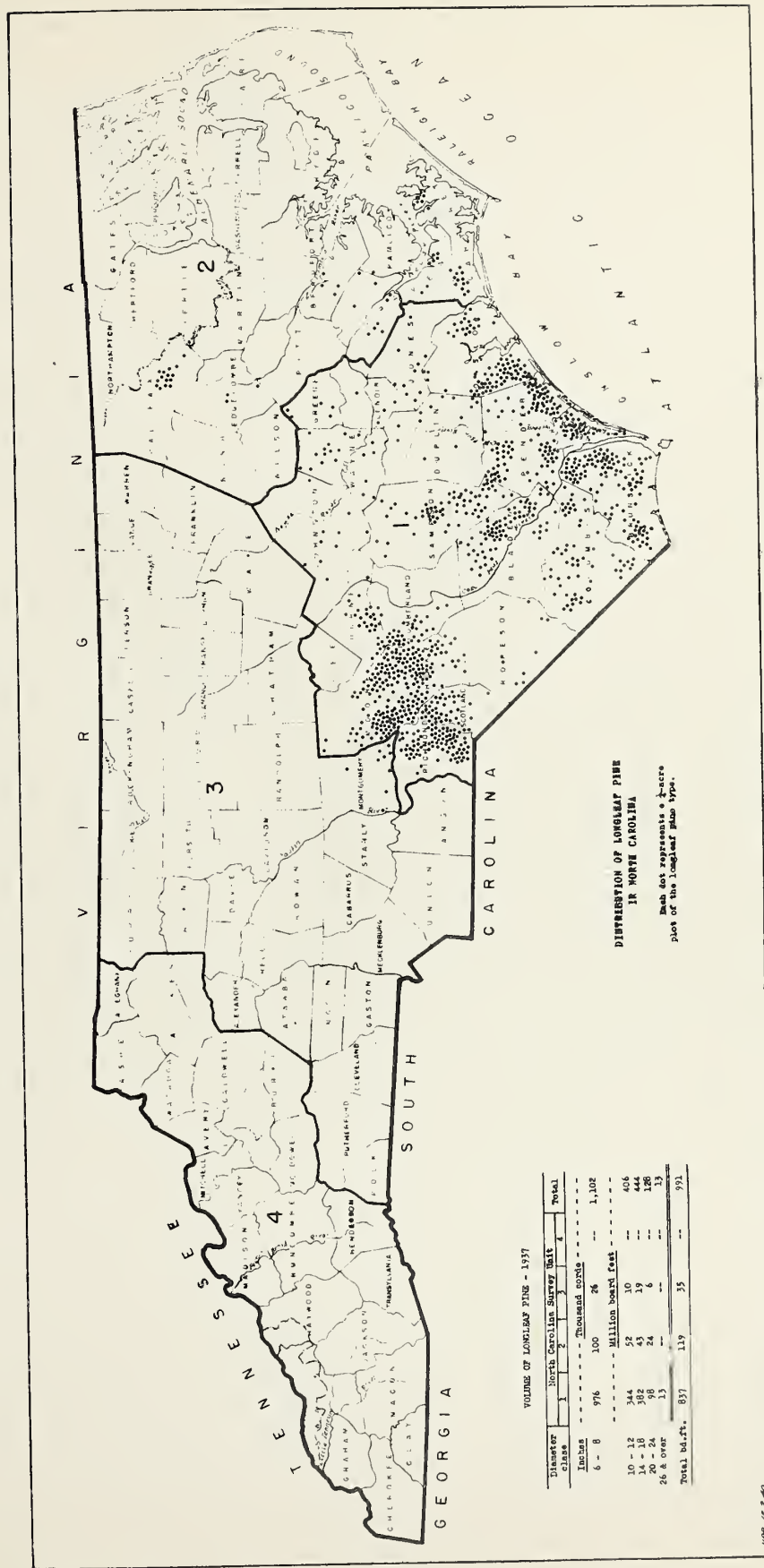
Diameter Inches	North Carolina Survey Unit				Total
	1	2	3	4	
6 - 8	4,366	4,801	2,140	--	11,307
10 - 12	2,525	2,929	752	--	6,206
14 - 18	2,782	3,767	632	--	7,181
20 - 24	888	1,111	232	--	2,231
28 & over	273	269	34	--	576
Total balft.	6,368	8,108	1,670	--	16,144



VOLUME OF SHORTLEAF PINE - 1937

Diameter class Inches	North Carolina Survey Unit				Total
	1	2	3	4	
6 - 8	508	225	8,114	1,579	10,425
10 - 12	153	73	2,992	520	3,746
14 - 18	55	68	1,675	333	2,591
20 - 24	27	7	285	66	385
26 & over	—	—	—	49	49
Total leaf.	745	148	5,005	977	6,375

FOREST SURVEY
APPALACHIAN FOREST EXPERIMENT STATION

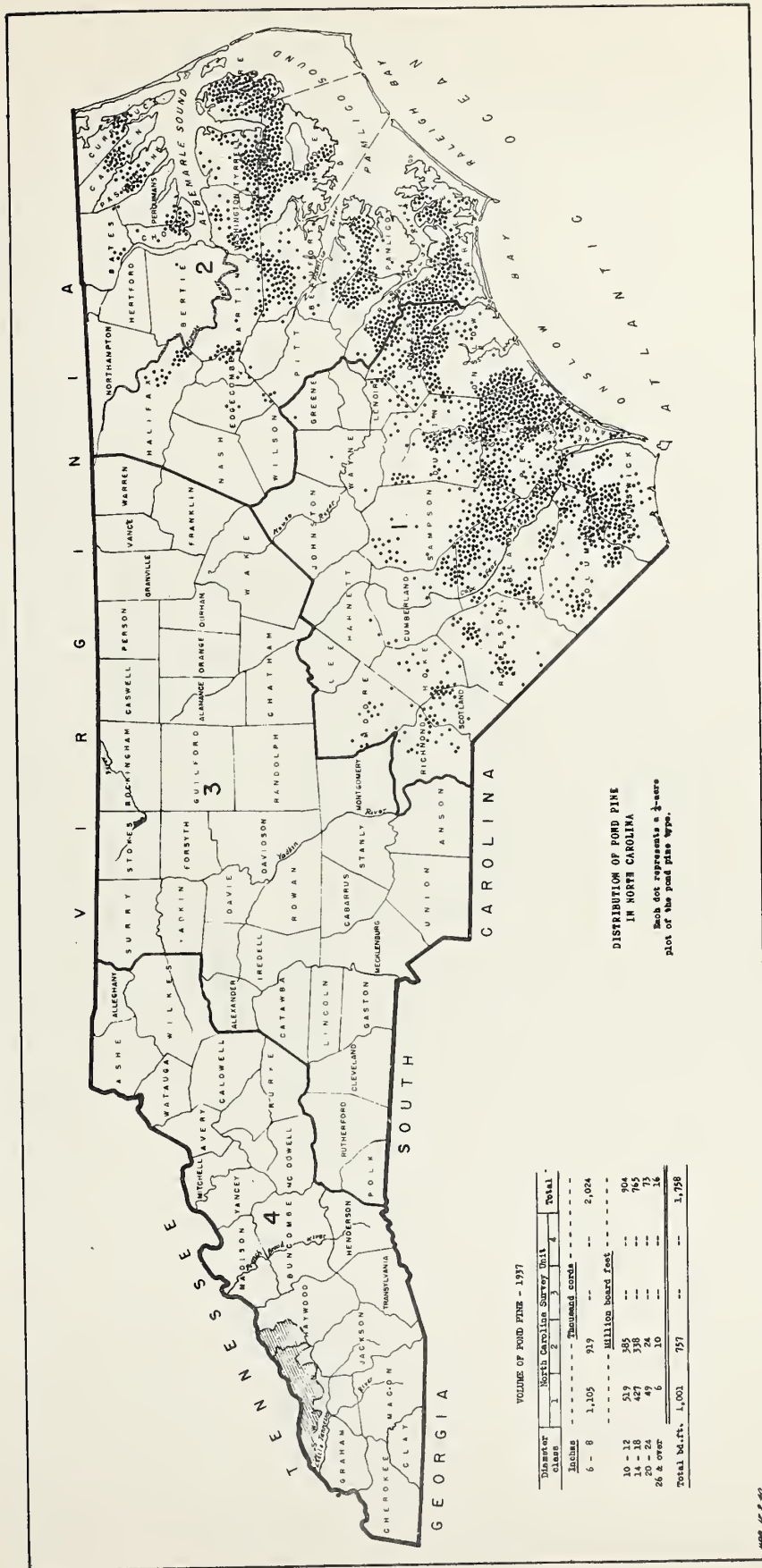


VOLUME OF LONGLEAF PINE - 1937

Diameter class	1	2	3	4	Total
Inches	1	2	3	4	
6 - 8	976	100	26	--	1,102
	--- Million board feet ---				
10 - 12	344	52	10	--	406
14 - 16	382	43	19	--	444
20 - 24	98	24	6	--	128
26 & over	15	--	--	--	15
Total bbl.ft.	837	119	35	--	991

FOREST SURVEY
APPALACHIAN FOREST EXPERIMENT STATION

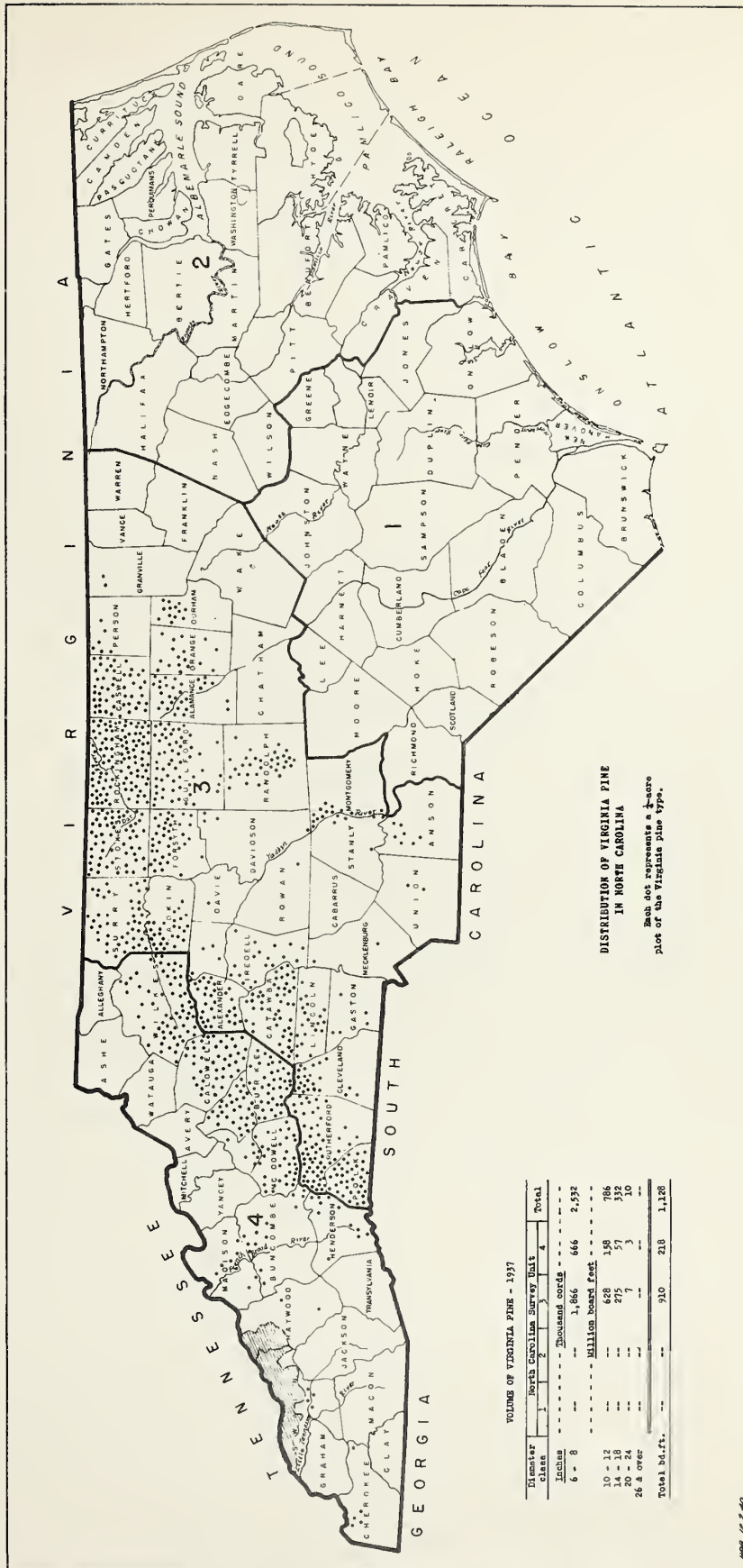
MAP 17-2-40



VOLUME OF FORD PINE - 1937

Diameter class	1	2	3	4	Total
Inches					
6 - 8	1,105	919	--	--	2,024
	----- Million board feet -----				
10 - 12	519	595	--	--	914
14 - 16	427	570	--	--	997
20 - 24	49	24	--	--	73
26 & over	6	10	--	--	16
Total Bd. Ft.	1,003	951	--	--	1,958

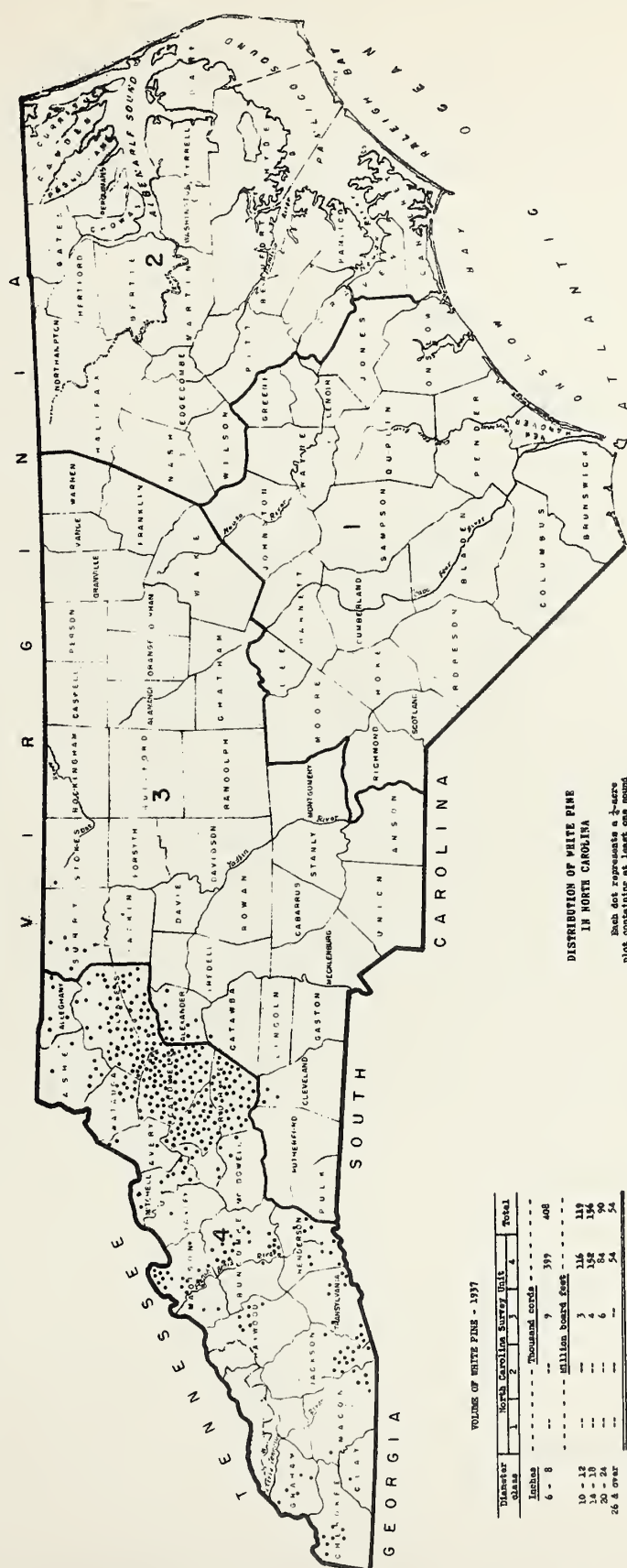
FOREST SURVEY
APPALACHIAN FOREST EXPERIMENT STATION



VOLUME OF VIRGINIA PINE - 1937

Diameter class	North Carolina Survey Unit				Total
	1	2	3	4	
Incise	---	---	1,866	666	2,532
6 - 8	---	---	---	---	---
10 - 12	---	---	628	158	786
14 - 18	---	---	275	57	332
20 - 24	---	---	7	3	10
26 & over	---	---	---	---	---
Total b.f.t.	---	---	910	218	1,128

FOREST SURVEY
APPALACHIAN FOREST EXPERIMENT STATION

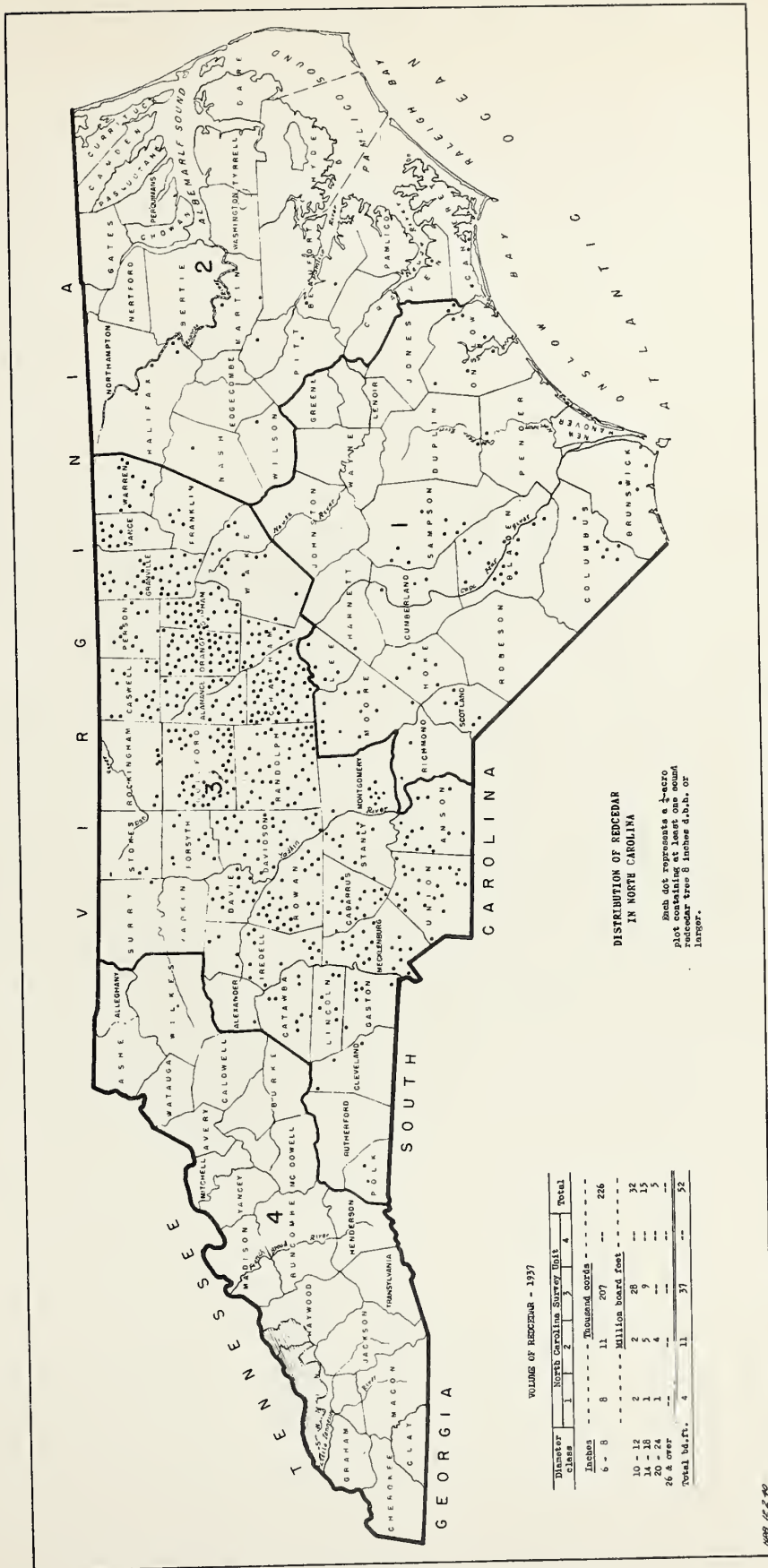


DISTRIBUTION OF WHITE PINE
IN NORTH CAROLINA

Each dot represents a 2-acre
plot containing at least one round
white pine tree 10 inches d.b.h.
or larger.

VOLUME OF WHITE PINE - 1937

Diameter class inches	North Carolina Survey Units				Total
	1	2	3	4	
6 - 8	---	---	9	399	408
----- Million board feet -----					
10 - 12	---	---	2	116	119
14 - 16	---	---	2	118	116
20 - 24	---	---	6	84	90
26 & over	---	---	---	54	54
Total b.d.ft.	---	---	13	406	419

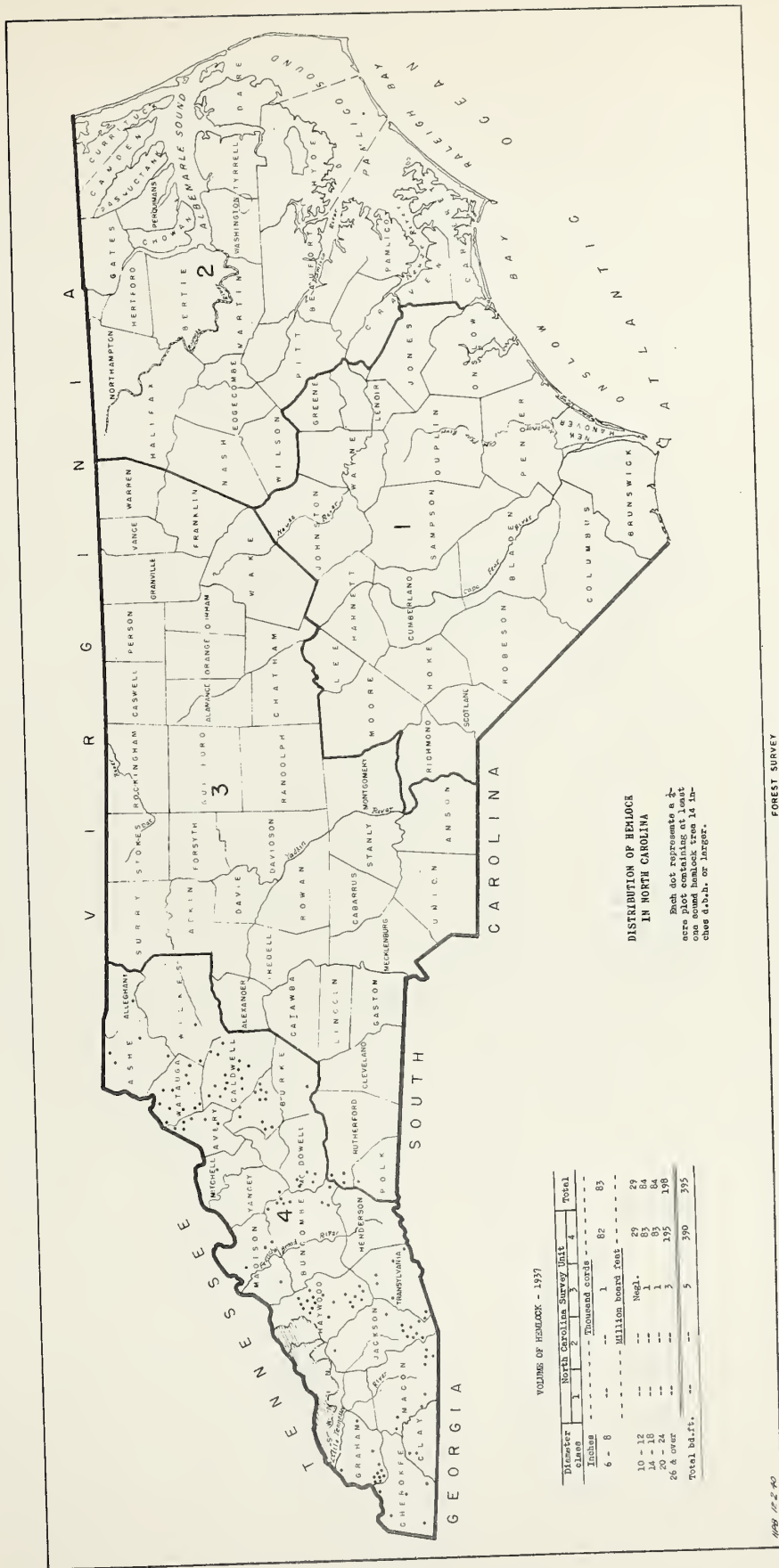


VOLUME OF REDCEDAR - 1937

Diameter Class	1	2	3	4	Total
Inches	1	2	3	4	
6 - 8	8	11	207	--	226
	Thousand cords				
10 - 12	2	2	28	--	32
14 - 16	1	5	9	--	15
20 - 24	1	4	--	--	5
26 & over	--	--	--	--	2
Total b.f.t.	4	11	37	--	52

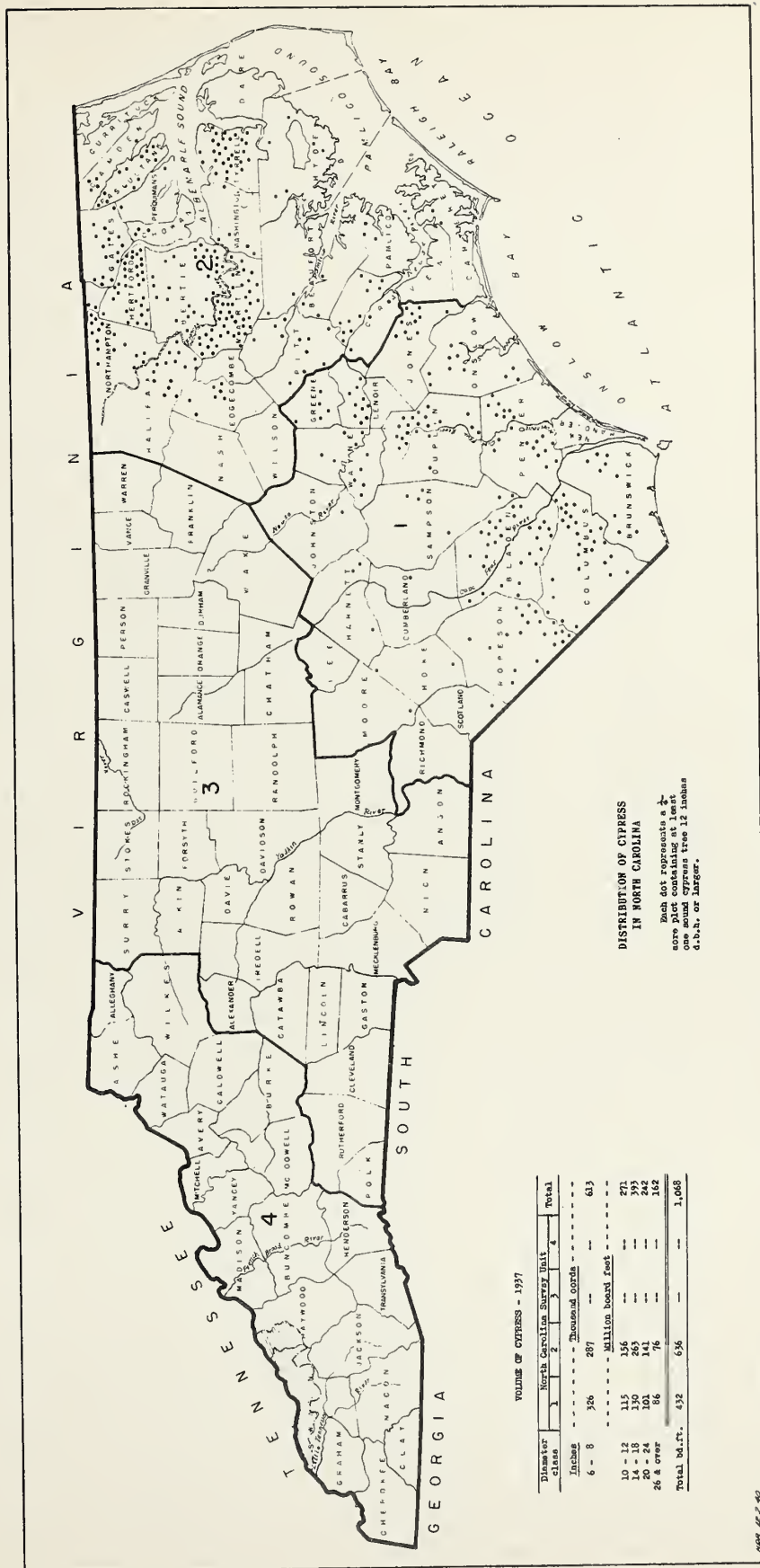
NRD 12-2-40

FOREST SURVEY
APPALACHIAN FOREST EXPERIMENT STATION



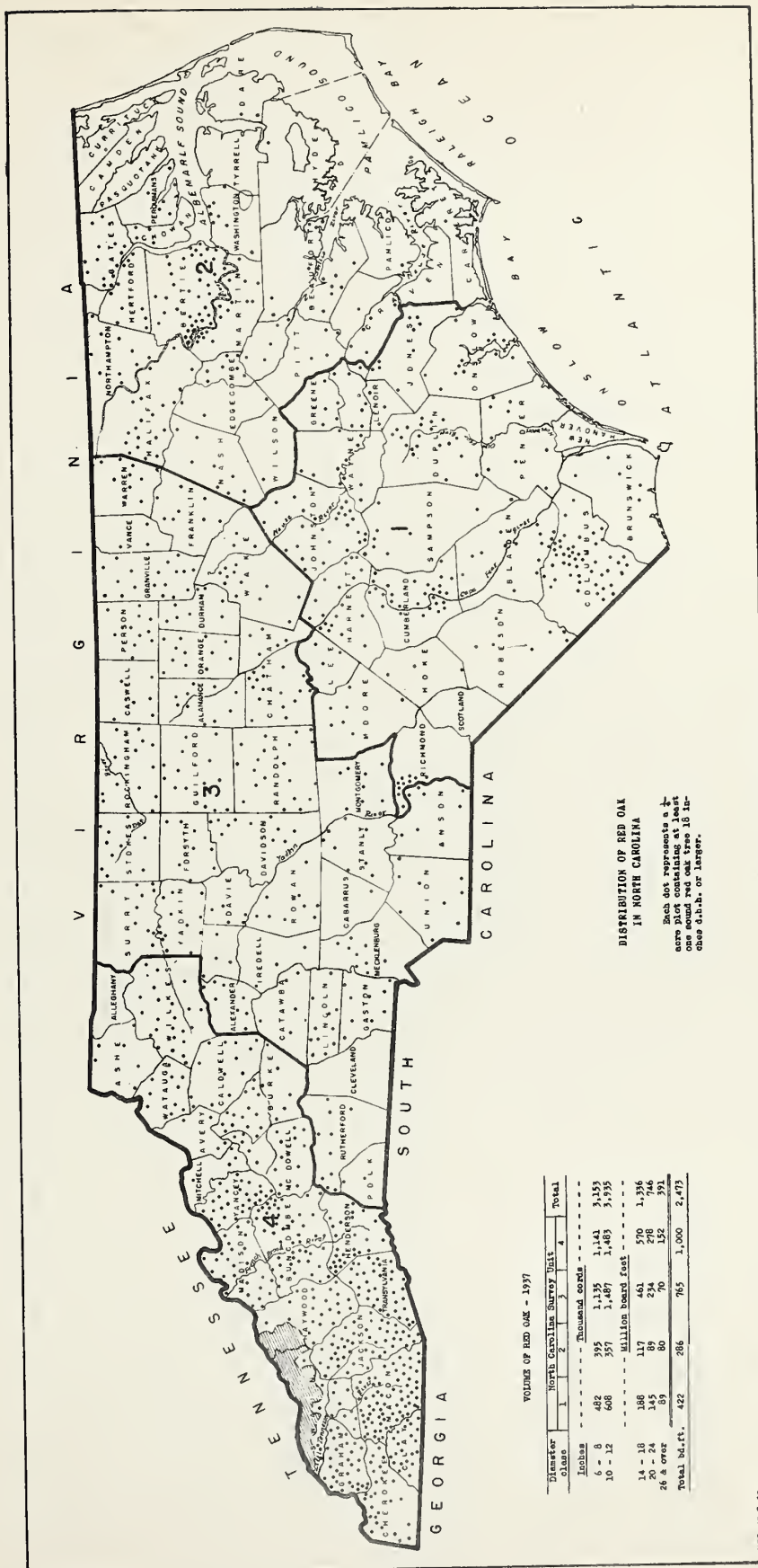
VOLUME OF HEMLOCK - 1937

Diameter class	North Carolina Survey Unit				Total
	1	2	3	4	
Inches	1	2	3	4	
6 - 8	--	--	1	82	83
	Thousand cords				
	Million board feet				
10 - 12	--	--	29	29	29
14 - 16	--	--	1	85	86
20 - 24	--	--	1	195	196
26 & over	--	--	5	390	395
Total b.d.ft.	--	--	5	390	395



VOLUME OF CYPRESS - 1937

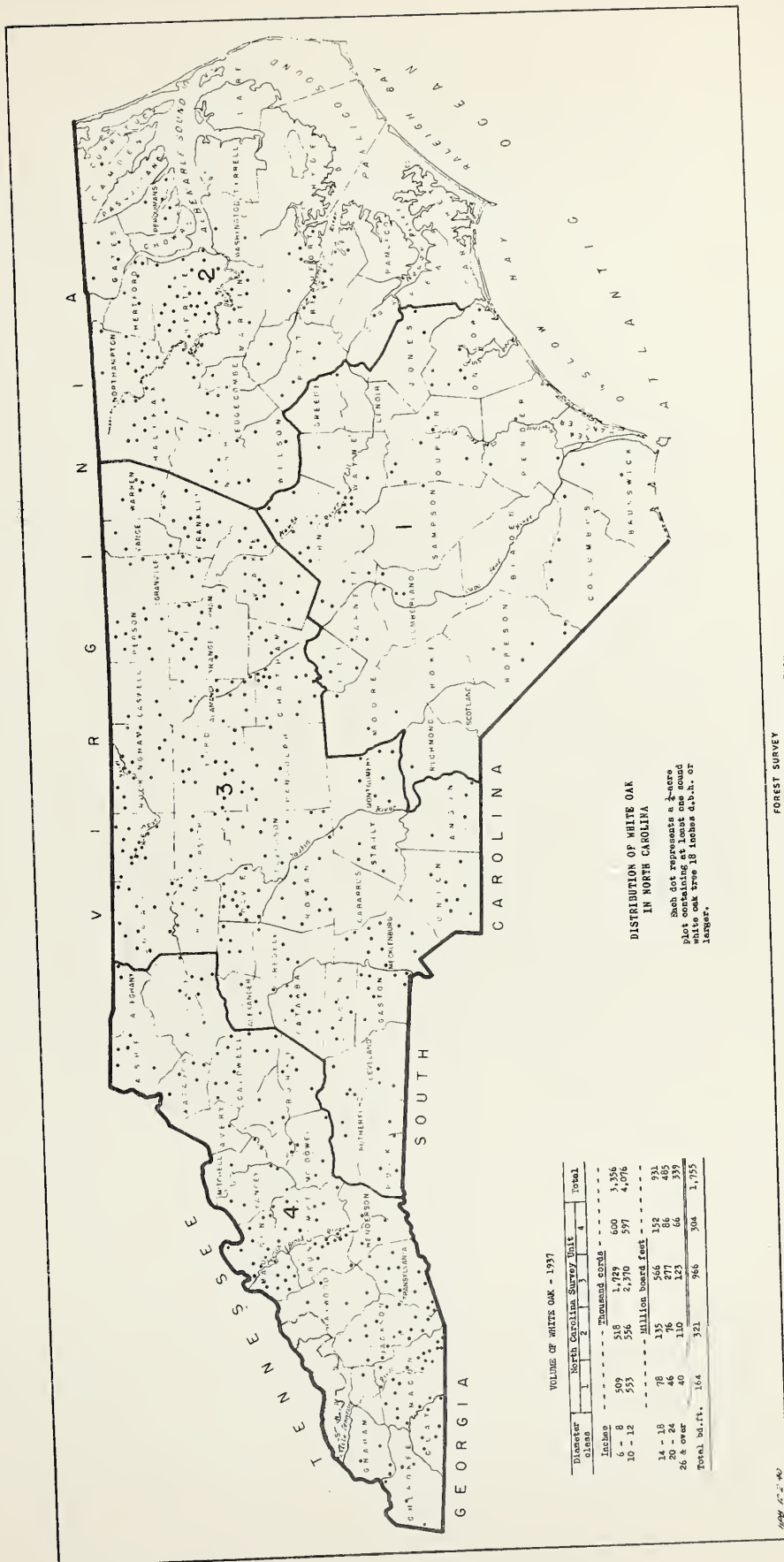
Diameter class	North Carolina Survey Unit				Total
	1	2	3	4	
Inches	6 - 8	8 - 10	10 - 12	12 - 14	
Volume	326	287	613	613	
Million board feet	115	156	271	271	
10 - 12	130	265	299	299	
14 - 16	186	176	152	152	
26 & over	432	656	1,068	1,068	
Total bd.ft.	432	656	1,068	1,068	



VOLUME OF RED OAK - 1937

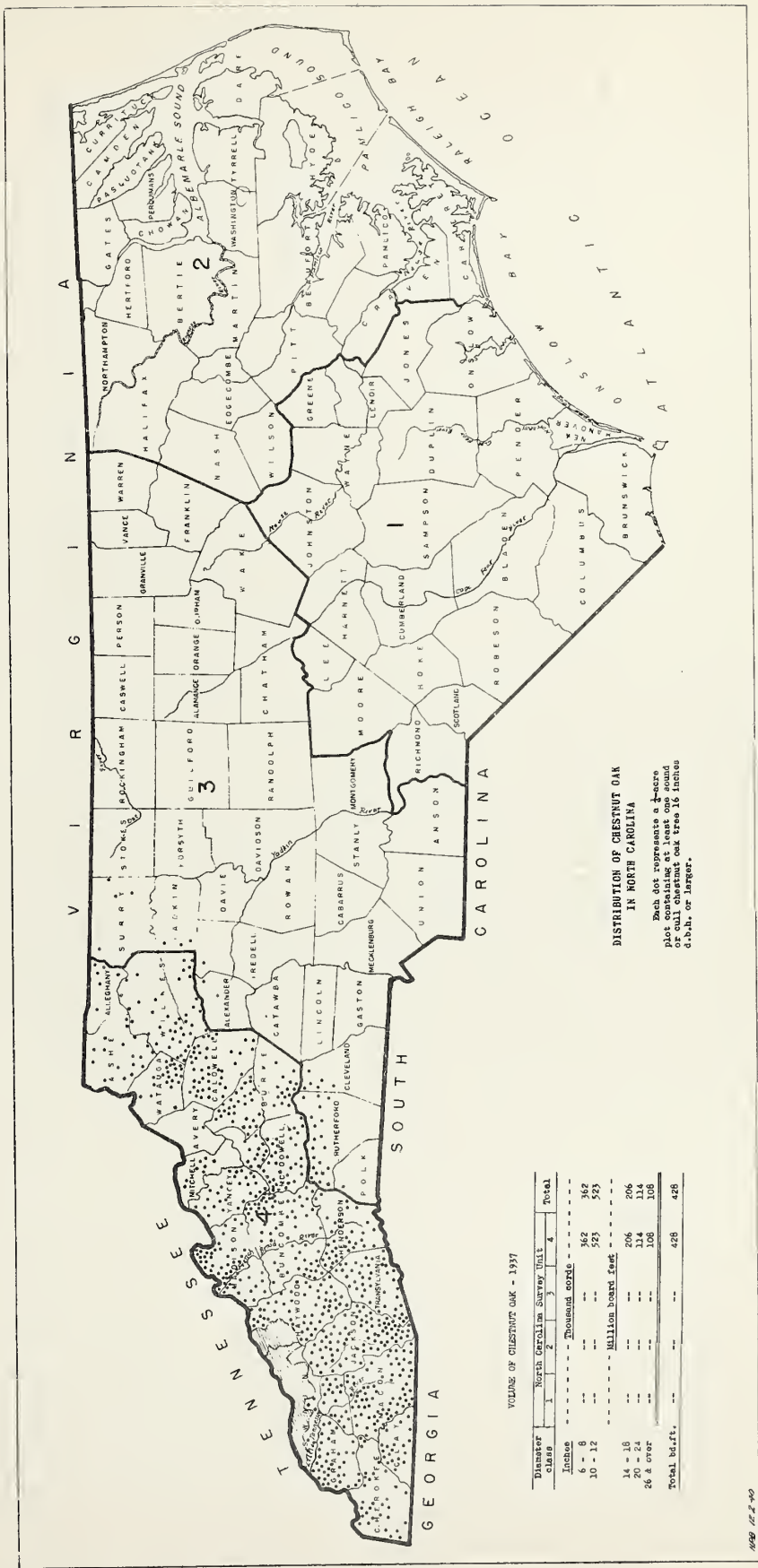
Stem diameter class	North Carolina Survey Units				Total
	1	2	3	4	
Acres	Thousand acres				
6 - 8	482	995	1,135	1,141	3,153
10 - 12	608	571	1,407	1,405	3,175
	Million board feet				
14 - 18	186	117	461	570	1,336
20 - 24	155	105	456	545	1,261
26 and over	139	80	70	152	391
Total b.c.f.	422	286	965	1,000	2,417

FOREST SURVEY
APPALACHIAN FOREST EXPERIMENT STATION



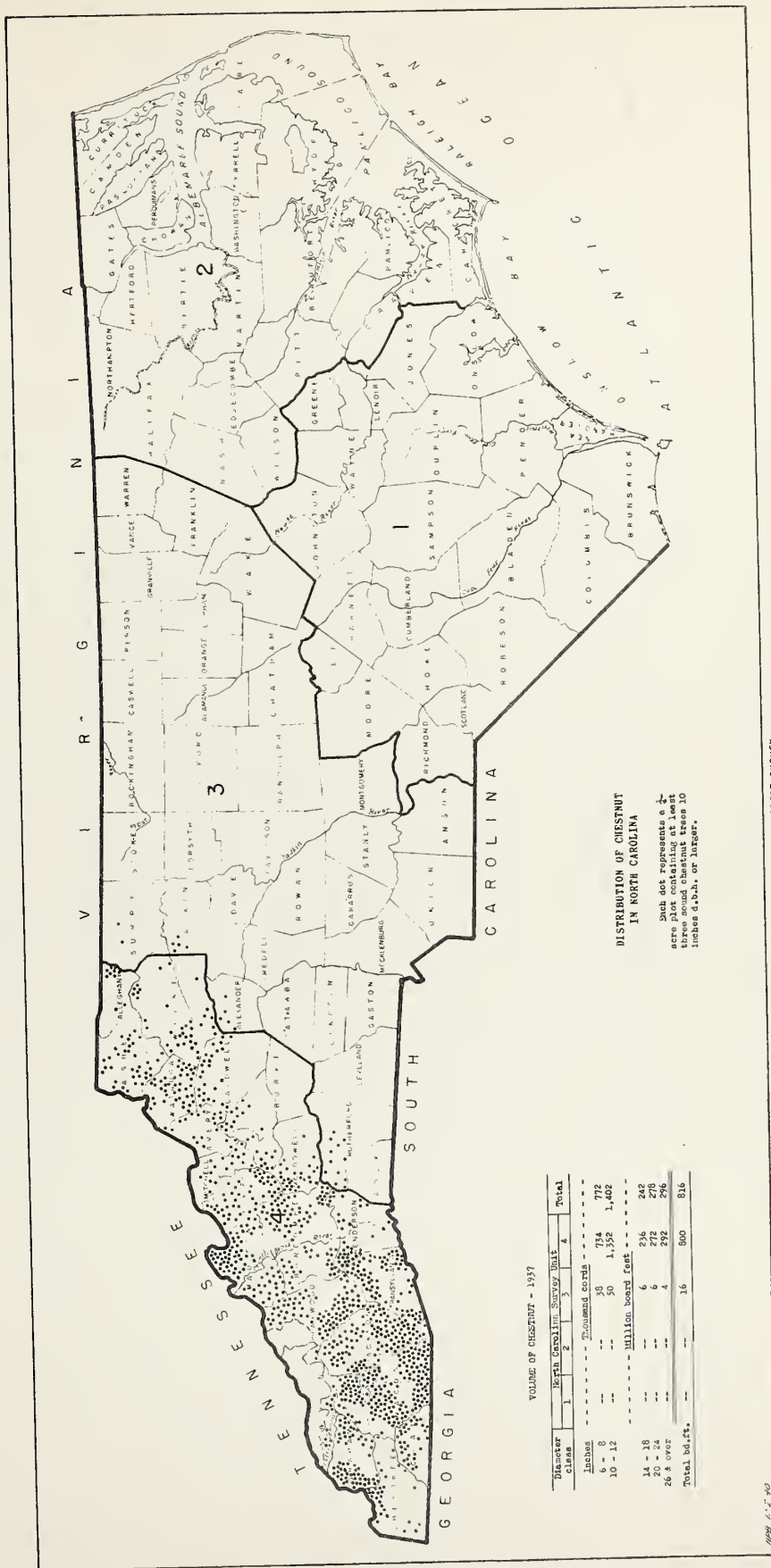
FOREST SURVEY
APPALACHIAN FOREST EXPERIMENT STATION

1000 17-2-40



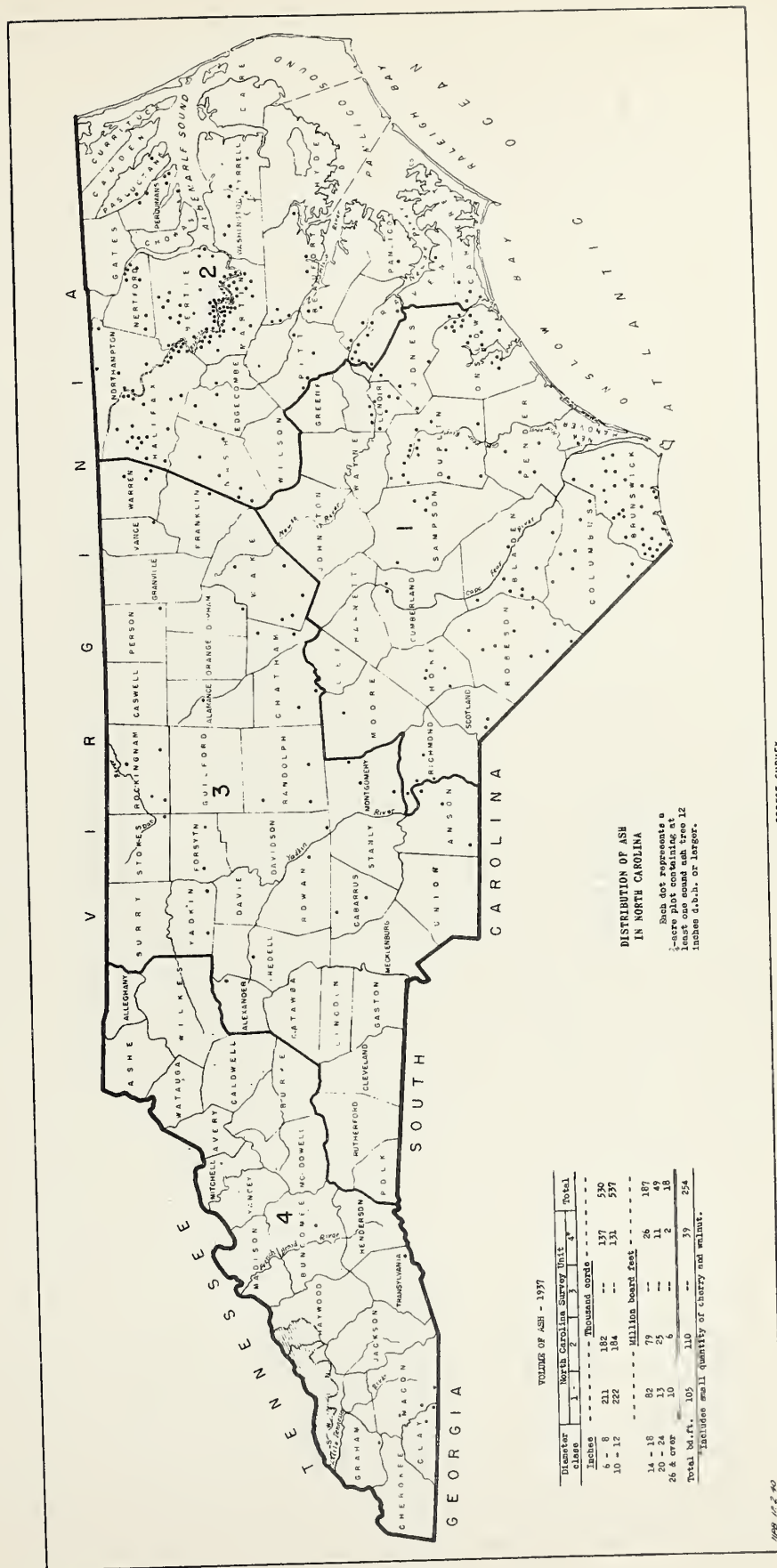
VOLUME OF CHESTNUT OAK - 1937

Diameter class	North Carolina Survey Unit				Total
	1	2	3	4	
Inches					
6 - 8	--	--	362	362	--
10 - 12	--	--	523	523	--
			Million board feet		
14 - 18	--	--	206	206	--
20 - 24	--	--	114	114	--
26 & over	--	--	108	108	--
Total b.d.f.	--	--	428	428	--



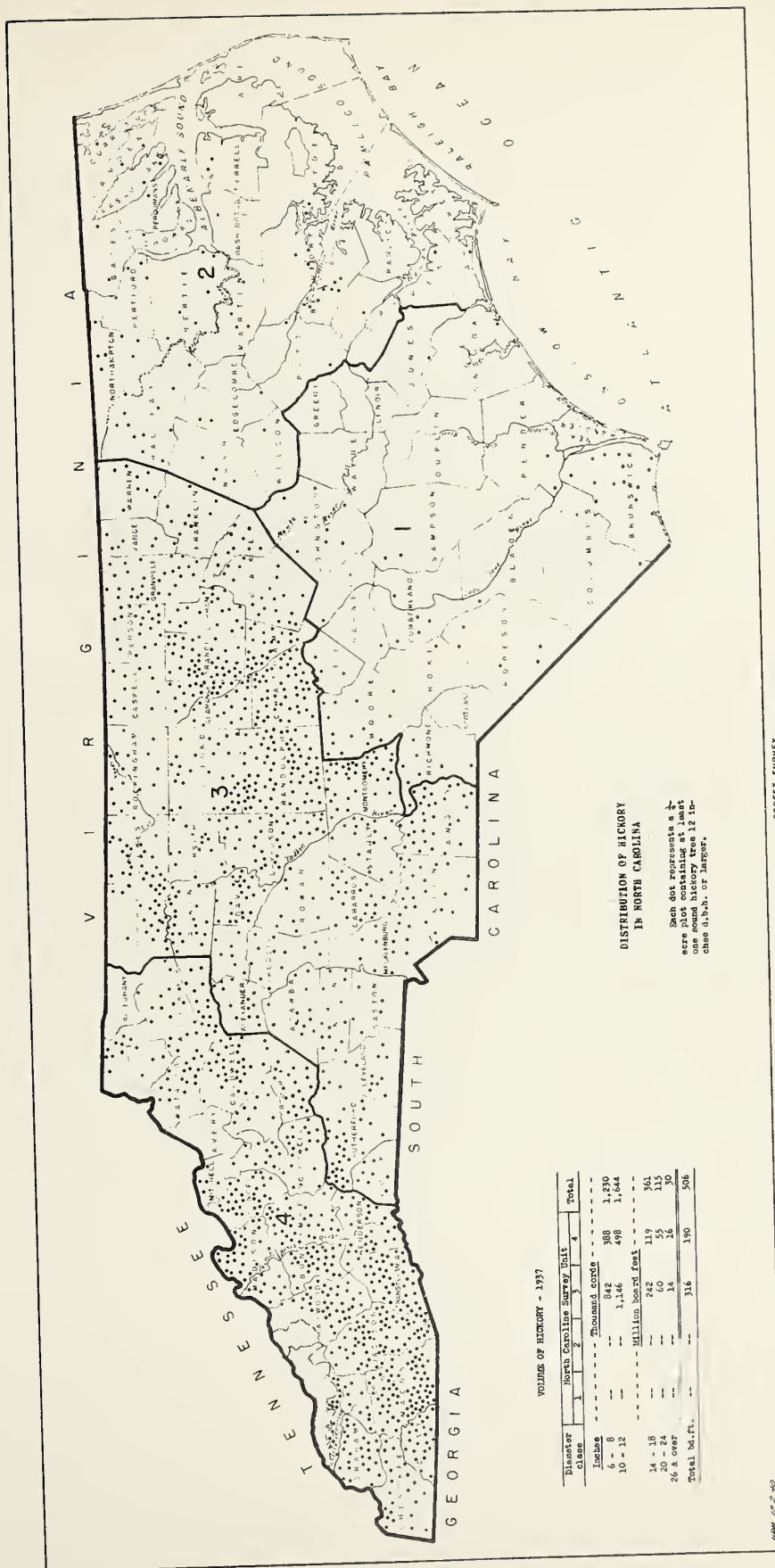
VOLUME OF CHESTNUT - 1937

Diameter class	North Carolina Survey Unit				Total
	1	2	3	4	
inches					
8	---	---	35	734	772
10 - 12	---	---	50	1,352	1,402
14 - 18	---	---	---	---	---
20 - 24	---	---	---	---	---
26 & over	---	---	---	---	---
Total b.d.ft.	---	---	16	800	816



FOREST SURVEY
APPALACHIAN FOREST EXPERIMENT STATION

1937, p. 2, 40



DISTRIBUTION OF HICKORY
IN NORTH CAROLINA

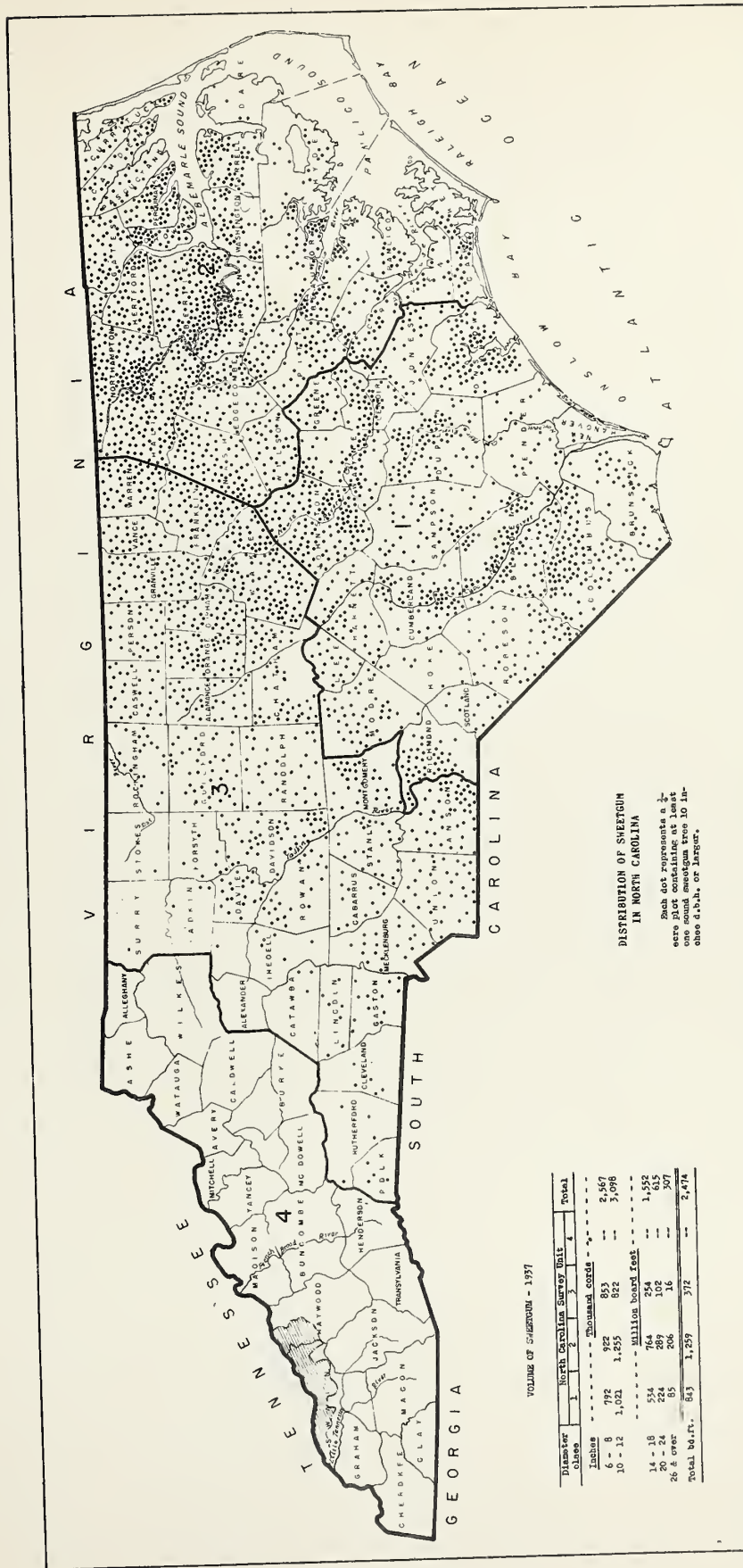
Each dot represents a tree
were present containing at least
one sound hickory tree 12 in-
ches d.b.h. or larger.

VOLUME OF HICKORY - 1937

Diameter class	1	2	3	4	Total
6 - 8	---	---	842	368	1,210
10 - 12	---	---	1,146	498	1,644
14 - 18	---	---	242	119	361
20 - 24	---	---	60	25	85
26 & over	---	---	14	30	44
Total b.b.f.	---	---	716	190	906

FOREST SURVEY
APPALACHIAN FOREST EXPERIMENT STATION

MAP 112-2-40

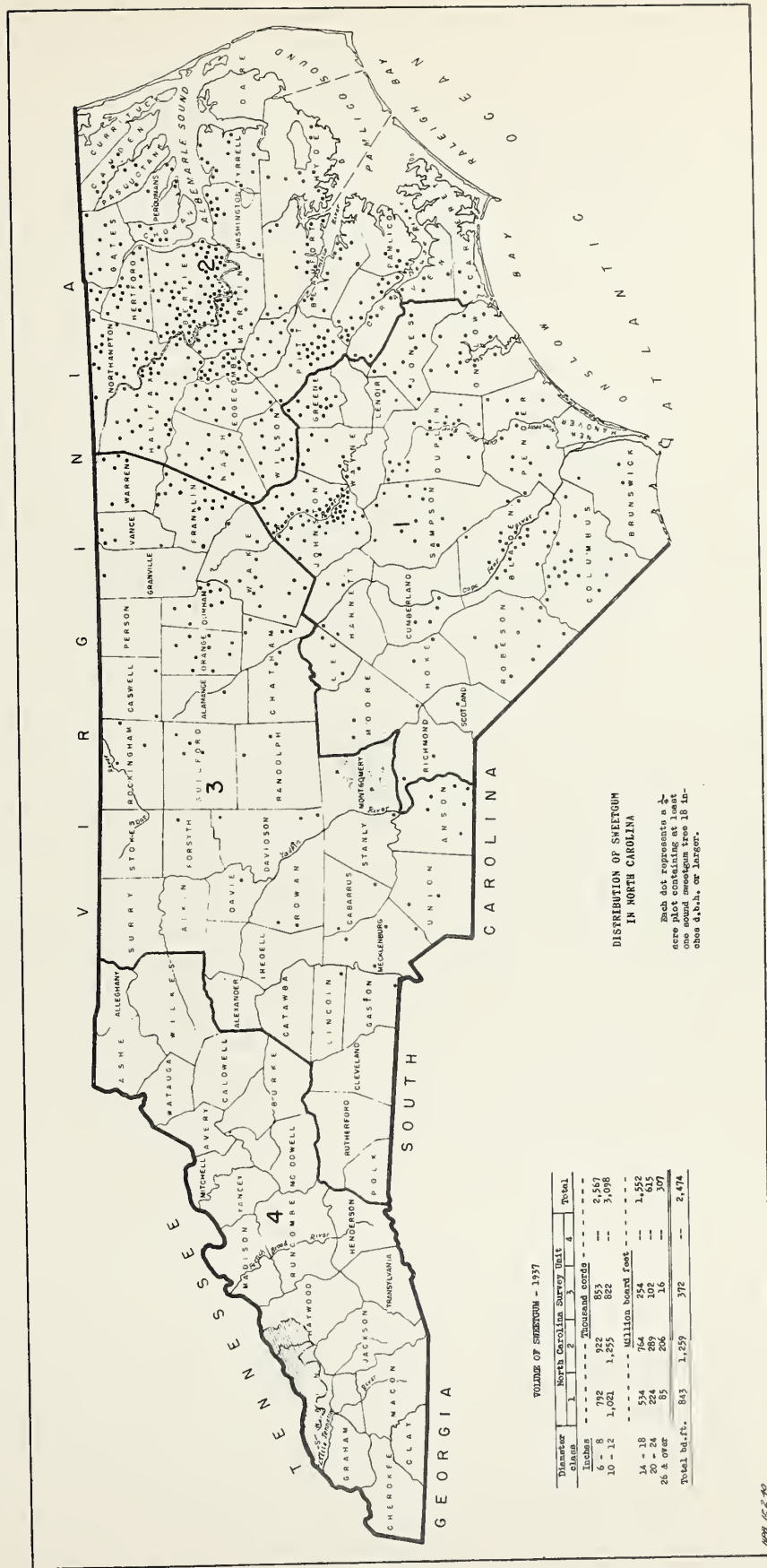


VOLUME OF CYPRESS - 1977

Diameter class	North Carolina Survey Unit				Total
	1	2	3	4	
Inches	Thousand cords				
6 - 8	792	922	853	--	2,567
10 - 12	1,021	1,255	822	--	3,098
----- Million board feet -----					
14 - 18	534	764	254	--	1,552
20 - 24	224	289	102	--	615
26 & over	85	206	16	--	297
Total b.b.f.	843	1,259	372	--	2,474

FOREST SURVEY
APPALACHIAN FOREST EXPERIMENT STATION

1980 10 20 40

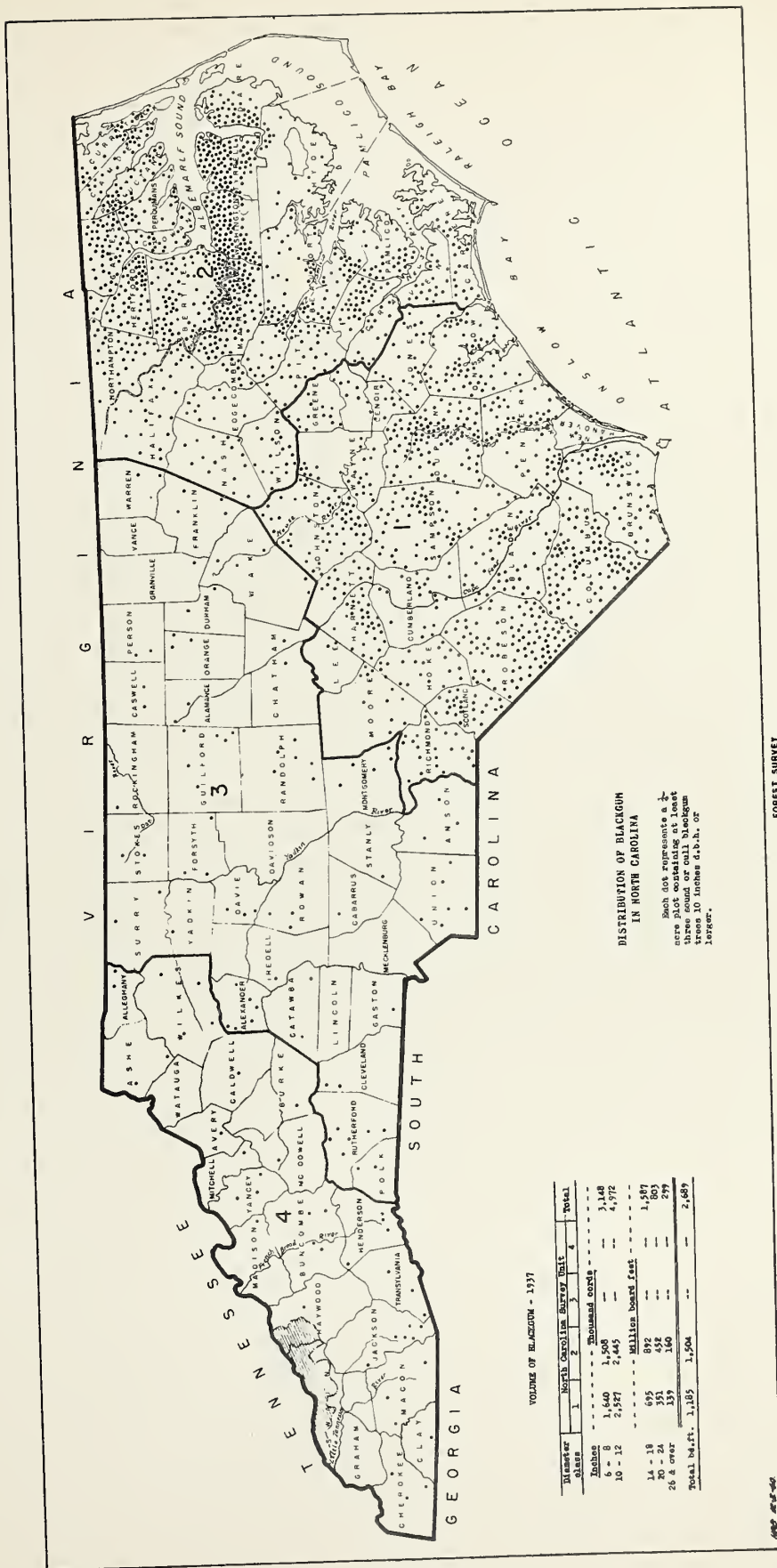


DISTRIBUTION OF SYCETUM
IN NORTH CAROLINA

Each dot represents a
acre plot containing at least
one sycetum tree 10 in-
ches dia. or larger.

TOTALS OF SYCETUM - 1937

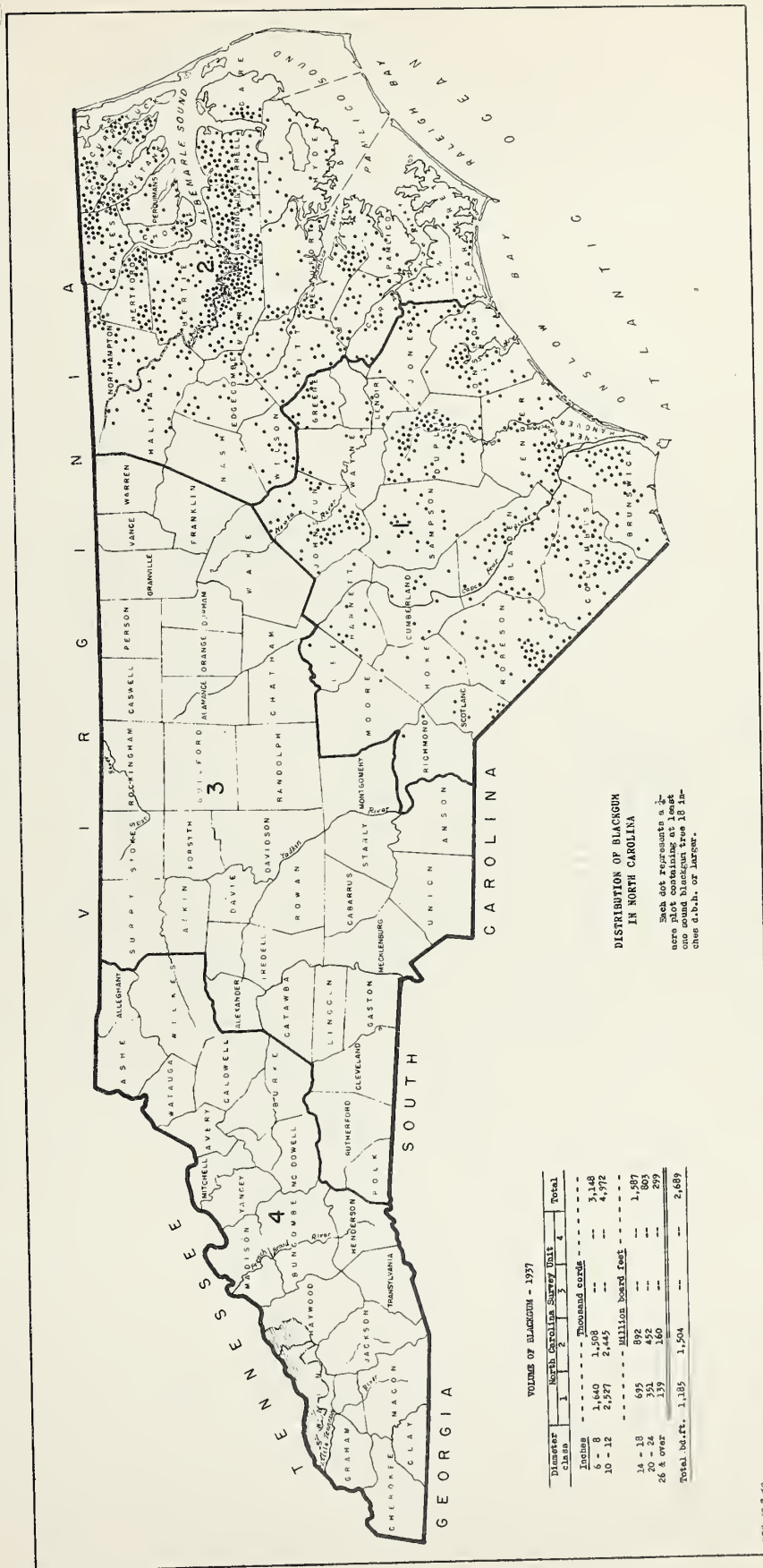
Diameter Class	1	2	3	4	Total
Less than 10	1,021	1,255	822	85	3,163
10 - 12	1,021	1,255	822	85	3,163
12 - 14	1,021	1,255	822	85	3,163
14 - 16	1,021	1,255	822	85	3,163
16 - 18	1,021	1,255	822	85	3,163
18 - 20	1,021	1,255	822	85	3,163
20 - 24	1,021	1,255	822	85	3,163
24 & over	1,021	1,255	822	85	3,163
Total	8,43	1,259	372	---	2,474



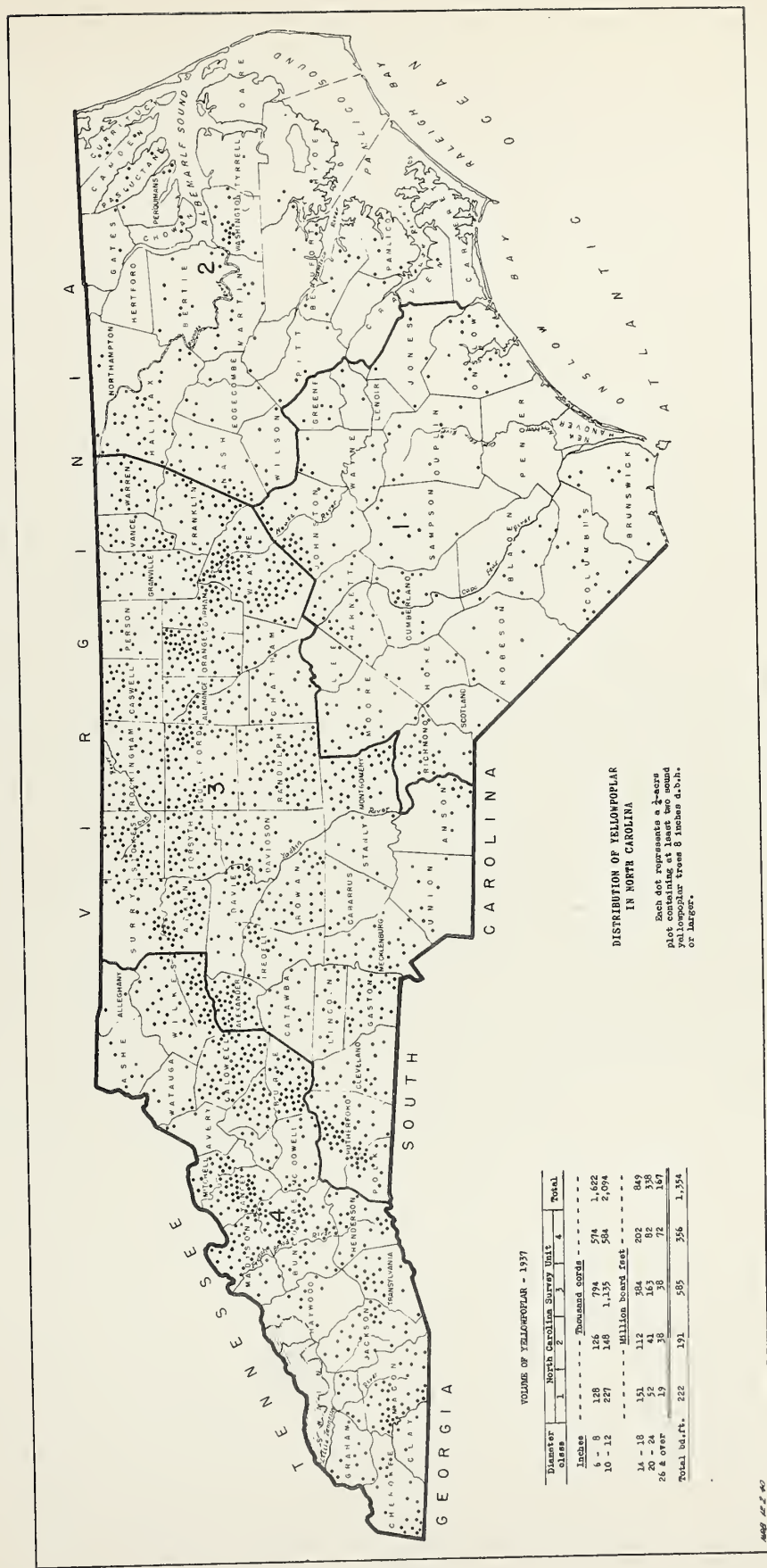
VOLUME OF BLACKGUM - 1937

Diameter Class	1	2	3	4	Total
6 - 8	1,640	1,908	--	--	3,548
10 - 12	2,527	2,445	--	--	4,972
14 - 18	695	892	--	--	1,587
20 - 24	351	432	--	--	783
26 & over	139	140	--	--	279
Total b.b.f.	3,185	3,504	--	--	6,689

FOREST SURVEY
APPALACHIAN FOREST EXPERIMENT STATION



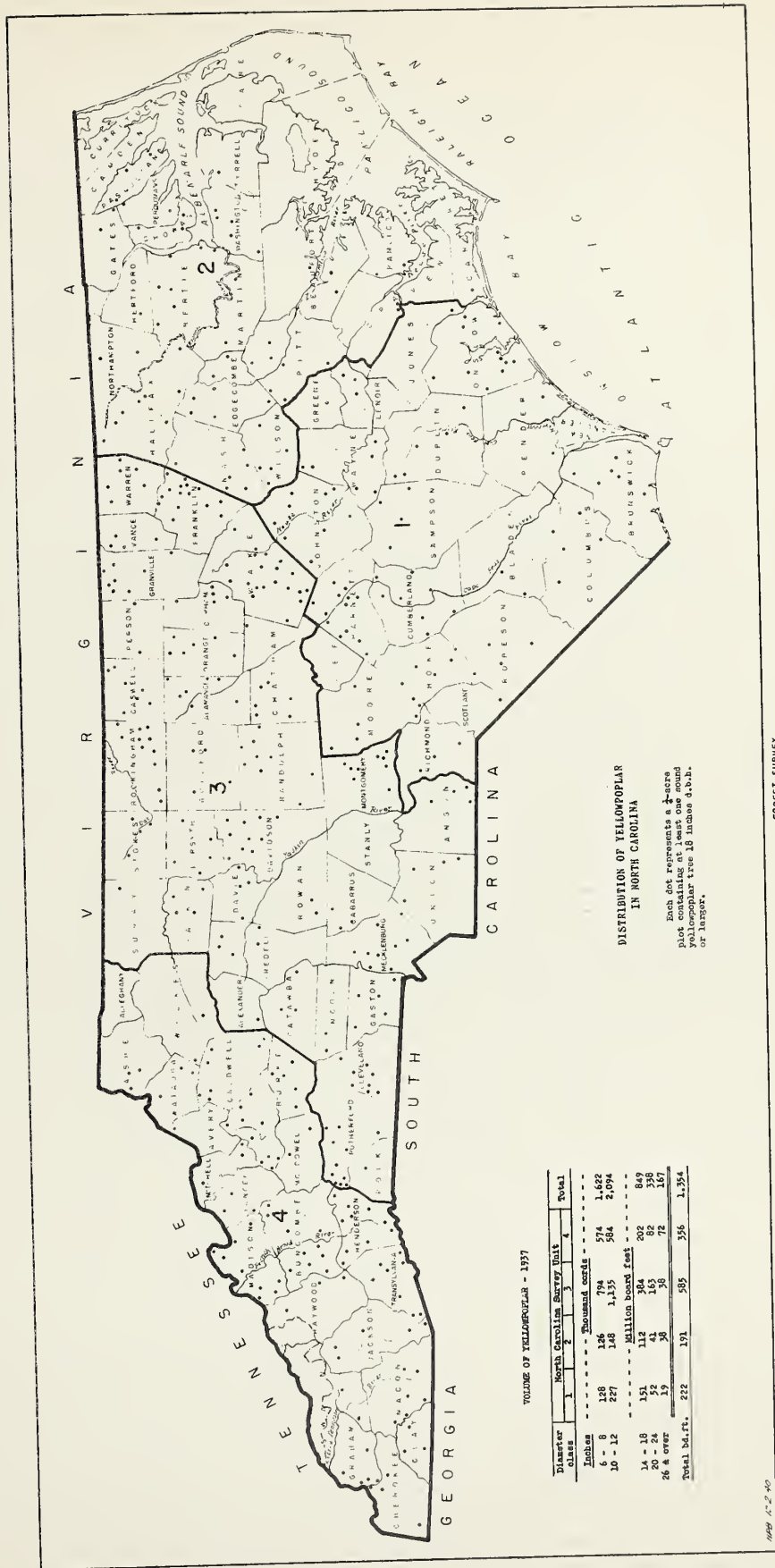
FOREST SURVEY
APPALACHIAN FOREST EXPERIMENT STATION



VOLUME OF YELLOWPOPULAR - 1937

Diameter class	North Carolina Survey Unit				Total
	1	2	3	4	
Inches	Thousand cords				
4 - 6	128	126	794	574	1,622
6 - 10	227	148	1,135	584	2,094
10 - 12	Million board feet				
14 - 18	151	112	394	202	849
18 - 24	52	41	163	82	338
24 & over	19	38	58	72	167
Total b.b.f.	222	191	585	356	1,354

FOREST SURVEY
APPALACHIAN FOREST EXPERIMENT STATION

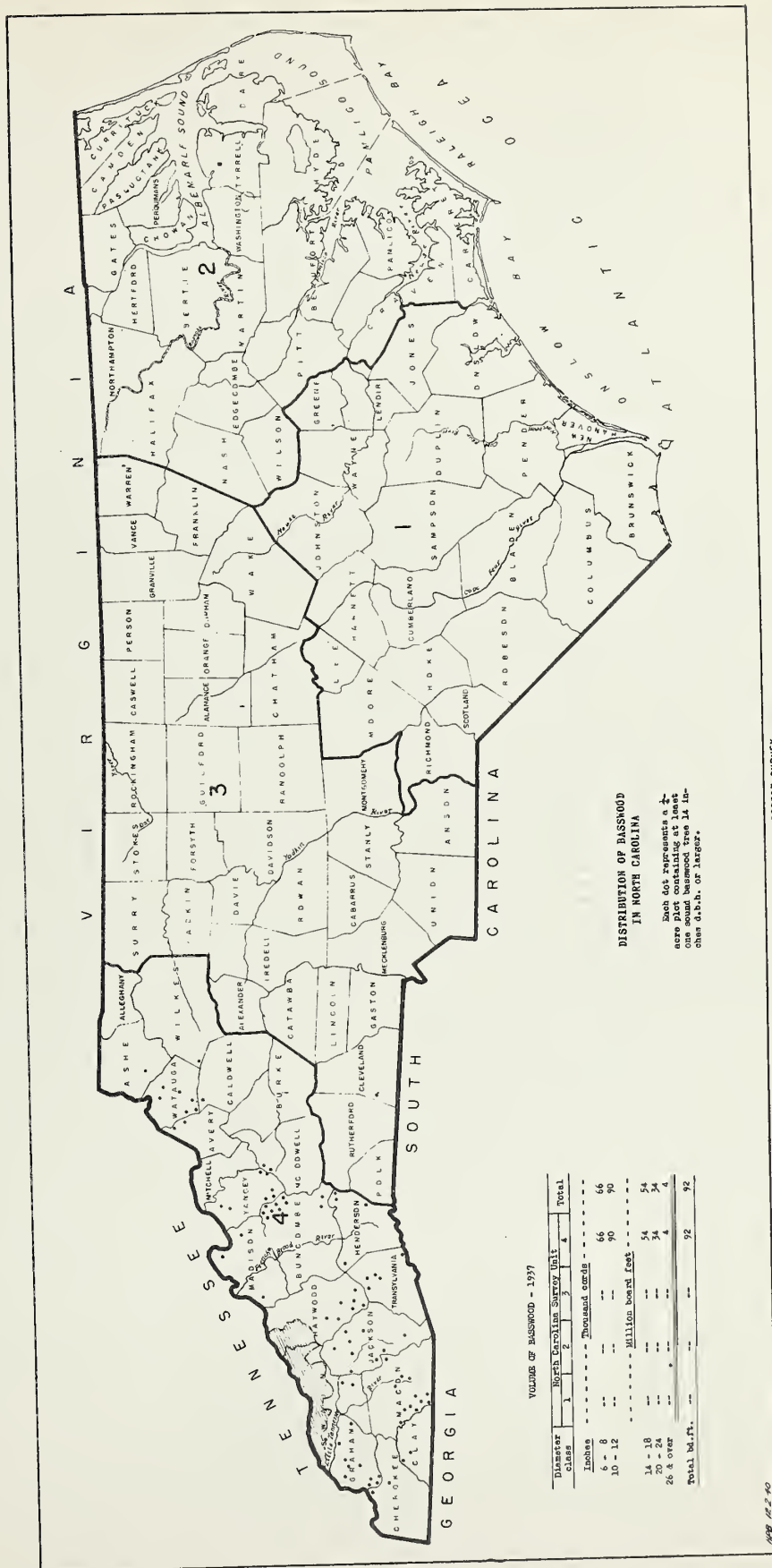


VOLUME OF YELLOWPOPLAR - 1937

Diameter class	1	2	3	4	Total
Inches					
6 - 8	128	126	794	574	1,622
10 - 12	227	148	1,135	504	2,094
			Million board feet		
14 - 18	151	112	384	202	849
20 - 24	52	41	153	72	318
26 & over	19	30	58	72	169
Total b.d.f.	222	191	505	356	1,354

Map 11-2-40

FOREST SURVEY
APPALACHIAN FOREST EXPERIMENT STATION



FOREST SURVEY
 APPALACHIAN FOREST EXPERIMENT STATION

NRB 102-40

